

FOURTH SUPPLEMENTAL INFORMATION
DISCLOSURE STATEMENT

ATTY. DOCKET NO.
1875.0210000

APPLICATION NO.
09/783,034

APPLICANT
Khan et al.

FILING DATE
February 15, 2001

GROUP
2826

February 15, 2001
U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
W	AL1	10-189835	07/1998	Japan	H01L	23/60	Yes No
I	AM1	2000-286294	10/2000	Japan	H01L	21/60	Yes No
W	AN1	61-49446	03/1986	Japan	H01L	23/36	Yes No
	AO1						Yes No
	AP1						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

W	AR	1	English-language Abstract of JP 10-169835, published July 21, 1998, 2 pages (last visited March 14, 2003).
S	AS	1	English-language Abstract of JP 2000-286294, published October 13, 2000, 2 pages (last visited March 14, 2003).
W	AT	1	Kamezas, M., "An EPBGA Alternative," <i>Advanced Packaging</i> , June 1998, pages 90, 92, 94, and 96.

EXAMINER

DATE CONSIDERED 7/1/74

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.



FORM PTO-14

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
UA	AA2	2002/0096767 A1	—	Cote <i>et al.</i>	257	738	01/25/2001
	AB2	2002/0098617 A1	—	Lee <i>et al.</i>	438	106	09/18/2001
	AC2	2002/0180040 A1	—	Camenforte <i>et al.</i>	257	738	05/30/2001
	AD2	5,438,216	08/1995	Juskey <i>et al.</i>			
	AE2	5,801,432	09/1998	Rostoker <i>et al.</i>			
	AF2	5,953,589	09/1999	Shim <i>et al.</i>			
	AG2	6,069,407	05/2000	Hamzehdoost			
	AH2	09/849,537	—	Zhang <i>et al.</i>	—	—	05/07/2001
	AI2	10/020,207	—	Khan <i>et al.</i>	—	—	12/18/2001
	AJ2						
	AK2						

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL2						Yes No
	AM2						Yes No
	AN2						Yes No
	AO2						Yes No
	AP2						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

UA	AR	2	English-language Abstract of JP 61-49446, published March 11, 1986, 1 page.
UA	AS	2	Zhao, Z., Ph.D., "Thermal Design and Modeling of Packages," <i>IEEE Short Courses</i> , Broadcom Corporation, October 25, 2000, 95 pages.
UA	AT	2	Zhao, Z., Ph.D., "IC Package Thermal Issues and Thermal Design," ASAT, Inc., January 14, 2000, 98 pages, presented at 2 nd International Icepak User's Group Meeting, Palo Alto, CA, on February 7, 2000.

EXAMINER

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
LA	AA1	10/284,312	3/27/2003	Zhao et al.			10/31/2002
	AB1	10/284,340		Zhao et al.			10/31/2002
	AC1	10/201,891	12/12/2002	Zhao et al.			7/25/2002
	AD1	10/200,336	12/12/2002	Khan et al.			7/23/2002
	AE1	10/197,438	12/12/2002	Zhao et al.			7/18/2002
	AF1	10/201,309	12/19/2002	Khan et al.			7/24/2002
	AG1	10/201,893	12/12/2002	Zhao et al.			7/25/2002
	AH1	10/200,255	12/19/2002	Zhao et al.			7/23/2002
	AI1	10/101,751		Zhao et al.			3/21/2002
	AJ1	10/253,600		Zhong et al.			9/25/2002
MA	AK1	10/284,371	8/7/2003	Khan et al.			10/31/2002

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL1						Yes No
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	AN1						Yes No
	AO1						Yes No
	AP1						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

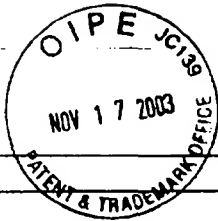
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U.S. PATENT DOCUMENTS

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LA	AA2	10/284,349	8/7/2003	Khan et al.			10/31/2002
	AB2	10/284,166	8/7/2003	Zhao et al.			10/31/2002
	AC2	10/284,366	8/7/2003	Zhao et al.			10/31/2002
	AD2	5,173,766	12/22/1992	Long et al.			0625/1990
	AE2	5,216,278	6/1/1993	Lin et al.			03/02/1992
	AF2	5,285,352	2/8/1994	Pastore et al.			07/15/1992
	AG2	5,552,635	9/3/1996	Kim et al.			1/10/1995
	AH2	5,866,949	02/02/1999	Schueler			10/8/1997
	AI2	5,949,137	09/07/1999	Domadia et al.			09/26/1997
	AJ2	5,986,340	11/16/1999	Mostafazadeh et al.			5/2/1996
	AK2	6,084,297	7/4/2000	Brooks et al.			9/3/1998

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
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	AM2						Yes No
	AN2						Yes No
	AO2						Yes No
	AP2						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
WA	AA3	6,246,111 B1	6/12/2001	Huang et al.			1/25/2000
	AB3	6,288,444 B1	9/11/2001	Abe et al.			6/4/1999
	AC3	6,369,455 B1	4/9/2002	Ho et al.			4/7/2000
	AD3	6,472,741 B1	10/29/2002	Chen et al.			7/14/2001
	AE3	6,525,942 B2	2/25/2003	Huang et al.			5/18/2001
	AF3	6,541,832 B2	4/1/2003	Coyle			1/19/2001
	AG3	6,545,351 B1	4/8/2003	Jamieson et al.			3/27/2000
	AH3	US2003/0138613 A1	7/24/2003	Thoman et al.			1/24/2002
	AI3	5,065,281	11/12/1991	Hernandez et al.			2/12/1990
	AJ3	5,717,252	2/10/1998	Nakashima et al.			12/2/1996
W	AK3	5,856,911	1/5/1999	Riley			11/12/1996

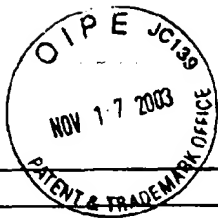
FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
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	AM3						Yes No
	AN3						Yes No
	AO3						Yes No
	AP3						Yes No

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LA	AA4	6,313,521 B1	11/6/2001	Baba			11/3/1999
	AB4	6,462,274 B1	10/8/2002	Shim et al.			10/20/1999
	AC4	6,528,892 B2	3/4/2003	Caletka et al.			6/5/2001
	AD4	6,563,712 B2	5/13/2003	Akram et al.			5/16/2002
	AE4	6,011,694	1/4/2000	Hirakawa			8/1/1997
	AF4	5,541,450	7/30/1996	Jones et al.			11/2/1994
	AG4	6,583,516 B2	6/24/2003	Hashimoto			11/1/2001
	AH4	6,552,266 B2	4/22/2003	Carden et al.			1/26/2001
	AI4	6,002,147	12/14/1999	Iovdalsky et al.			9/26/1996
	AJ4	6,060,777	5/9/2000	Jamieson et al.			7/21/1998
WO	AK4	5,920,117	7/6/1999	Sono et al.			3/18/1997

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	AM3						Yes No
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	AO3						Yes No
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
wo	AA5	5,650,659	7/22/1997	Mostafazadeh et al.			8/4/1995
	AB5	5,977,626	11/2/1999	Wang et al.			8/12/1998
	AC5	5,294,826	3/15/1994	Marcantonio et al.			4/16/1993
	AD5	6,552,428 B1	4/22/2003	Huang et al.			10/12/1999
	AE5	5,208,504	05/04/1993	Parker et al.			12/28/1990
	AF5	5,366,589	11/22/1994	Chang			11/16/1993
	AG5	5,394,009	02/28/1995	Loo			07/30/1993
	AH5	5,433,631	07/18/1995	Beaman et al.			06/29/1994
wo	AI5	5,907,903	06/01/1999	Ameen et al.			01/08/1998
	AJ5						
	AK5						

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL3						Yes No
	AM3						Yes No
	AN3						Yes No
	AO3						Yes No
	AP3						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
lt	AA1	5,397,921	03/1995	Karnazos	257	779	
	AB1	5,474,957	12/1995	Urushima	437	209	
	AC1	5,534,467	07/1996	Rostoker	437	209	
	AD1	09/984,259	---	Zhao et al.	---	---	10/29/2001
	AE1	09/997,272	---	Zhao et al.	---	---	11/30/2001
lt	AF1	09/742,366	---	Khan et al.	---	---	12/22/2000
	AG1						
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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
lt	AJ1	EP 0 504 411 B1	06/1998	EPO	H01L	23/04	Yes No
	AK1						Yes No
	AL1						Yes No
	AM1						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

lt	AN	1	Ahn, S.H. and Kwon, Y.S., "Popcorn Phenomena in a Ball Grid Array Package", IEEE Transactions on Components, Packaging, and Manufacturing Technology Part B: Advanced Packaging, IEEE, August 1995, Vol. 18, No. 3, pp. 491-96.
	AO	1	Amkor Electronics, "Amkor BGA Packaging: Taking The World By Storm", Electronic Packaging & Production, Cahners Publishing Company, May 1994, page unknown.
	AP	1	Anderson, L. and Trabucco, B., "Solder Attachment Analysis of Plastic BGA Modules", Surface Mount International Conference, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 189-194.
	AQ	1	Andrews, M., "Trends in Ball Grid Array Technology," Ball Grid Array National Symposium, March 29-30, 1995, Dallas, Texas, 10 pages.
lt	AR	1	Attarwala, A.I. Dr. and Stierman, R., "Failure Mode Analysis of a 540 Pin Plastic Ball Grid Array", Surface Mount International Conference, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 252-257.

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	AA2						
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AJ2						Yes No
	AK2						Yes No
	AL2						Yes No
	AM2						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

W	AN	2	Banerji, K., "Development of the Slightly Larger Than IC Carrier (SLICC), Journal of Surface Mount Technology, July 1994, pp. 21-26.
	AO	2	Bauer, C., Ph.D., "Partitioning and Die Selection Strategies for Cost Effective MCM Designs", Journal of Surface Mount Technology, October 1994, pp. 4-9.
	AP	2	Bernier, W.E. et al., "BGA vs. QFP: A Summary of Tradeoffs for Selection of High I/O Components", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 181-185.
	AQ	2	Burgos, J. et al., "Achieving Accurate Thermal Characterization Using a CFD Code-- A Case Study of Plastic Packages", IEEE Transactions on Components, Packaging, and Manufacturing Technology Part A, IEEE, December 1995, Vol. 18, No. 4, pp. 732-738.
	AR	2	Chadima, M., "Interconnecting Structure Manufacturing Technology," Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995.

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	AA3						
	AB3						
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AJ3						Yes No
	AK3						Yes No
	AL3						Yes No
	AM3						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

LA	AN	3	Chanchani, R. et al., "Mini BGA: Pad and Pitch Ease Die Test and Handling", Advanced Packaging, IHS Publishing Group, May/June 1995, pp.34, 36-37.
	AO	3	Chung, T.C. et al., "Rework of Plastic, Ceramic, and Tape Ball Grid Array Assemblies", Ball Grid Array National Symposium Proceedings, Dallas, Texas, March 29-30, 1995, pp. 1-15.
	AP	3	Cole, M.S. and Caulfield, T. "A Review of Available Ball Grid Array (BGA) Packages", Journal of Surface Mount Technology, Surface Mount Technology Association, January 1996, Vol. 9, pp. 4-11.
	AQ	3	Cole, M.S. and Caulfield, T., "Ball Grid Array Packaging", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 147-153.
WA	AR	3	Dobers, M. and Seyffert, M., "Low Cost MCMs: BGAs Provide a Fine-Pitch Alternative", Advanced Packaging, IHS Publishing Group, September/October 1994, Vol. 3, No. 5, pp. 28, 30 and 32.

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	AA4						
	AB4						
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	AI4						

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	AJ4						Yes No
	AK4						Yes No
	AL4						Yes No
	AM4						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

LO	AN	4	Dody, G. and Burnette, T., "BGA Assembly Process and Rework", Journal of Surface Mount Technology, Surface Mount Technology Association, January 1996, Vol. 9, pp. 39-45.
	AO	4	Edwards, D. et al., "The Effect of Internal Package Delaminations on the Thermal Performance of PQFP, Thermally Enhanced PQFP, LOC and BGA Packages", 45th Electronic Components & Technology Conference, IEEE, May 21-24, 1995, Las Vegas, NV, pp. 285-292.
	AP	4	Ejim, T.L. et al., "Designed Experiment to Determine Attachment Reliability Drivers for PBGA Packages", Journal of Surface Mount Technology, Surface Mount Technology Association, January 1996, Vol. 9, pp. 30-38.
	AQ	4	Ewanich, J. et al., "Development of a Tab (TCP) Ball Grid Array Package", Proceedings of the 1995 International Electronics Packaging Conference, San Diego, CA, September 24-27, 1995, pp. 588-594.
WA	AR	4	Fausser, S. et al., "High Pin-Count PBGA Assembly", Circuits Assembly, February 1995, Vol 6, No. 2, pp. 36-38 and 40.

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	AK5						Yes No
	AL5						Yes No
	AM5						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

WA	AN	5	Fausser, Suzanne et al., "High Pin Count PBGA Assembly: Solder Defect Failure Modes and Root Cause Analysis", Surface Mount International, Proceedings of The Technical Program, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 169-174.
	AO	5	Ferguson, M., "Ensuring High-Yield BGA Assembly", Circuits Assembly, February 1995, Vol. 6, No. 2, pp. 54, 56 and 58.
	AP	5	Freda, M., "Laminate Technology for IC Packaging", Electronic Packaging & Production, Cahners Publishing Company, October 1995, Vol. 35, No. 11, pp. S4-S5.
	AQ	5	Freedman, M., "Package Size and Pin-Out Standardization", Ball Grid Array National Symposium, March 29-30, 1995, 7 pages.
WD	AR	5	Freyman, B. and Pennisi, R., "Over-molded Plastic Pad Array Carriers (OMPAC): A Low Cost, High Interconnect Density IC Packaging Solution for Consumer and Industrial Electronics", 41st Electronic Components & Technology Conference, IEEE, May 11-16, 1991, pp. 176-82.

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	AA6						
	AB6						
	AC6						
	AD6						
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	AK6						Yes
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	AL6						Yes
							No
	AM6						Yes
							No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

WA	AN	6	Freyman, B. et al., "Surface Mount Process Technology for Ball Grid Array Packaging", Surface Mount International Conference Proceedings, Surface Mount International, August 29-September 2, 1993, San Jose, California, pp. 81-85.
	AO	6	Freyman, B. et al., "The Move to Perimeter Plastic BGAs", Surface Mount International Conference Proceedings, San Jose, CA, August 29-31, 1995, pp. 373-382.
	AP	6	Freyman, B., "Trends in Plastic BGA Packaging," Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995, 45 pages.
	AQ	6	Gilleo, K., "Electronic Polymers: Die Attach and Oriented Z-Axis Films", Advanced Packaging, IHS Publishing Group, September/October 1994, Vol. 3, No. 5, pp. 37-38, 40 and 42.
WV	AR	6	Guenin, B. et al., "Analysis of a Thermally Enhanced Ball Grid Array Package", IEEE Transactions on Components, Packaging, and Manufacturing Technology, Part A, IEEE Components, Packaging, and Manufacturing Technology Society, December 1995, Vol. 18, No. 4, pp. 749-757.

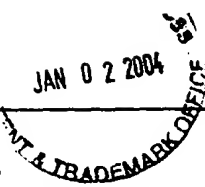
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2826SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
	AA7						
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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AJ7						Yes No
	AK7						Yes No
	AL7						Yes No
	AM7						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

<i>WA</i>	AN	Z	Hart, C., "Vias in Pads for Coarse and Fine Pitch Ball Grid Arrays", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 203-207.
<i> </i>	AO	Z	Hart, C. "Vias in Pads", Circuits Assembly, February 1995, Vol. 6, No. 2, pp. 42, 44-46 and 50.
<i> </i>	AP	Z	Hattas, D., "BGAs Face Production Testing: New Package Offers Promise but Must Clear Technology Hurdles.", Advanced Packaging, IHS Publishing Group, Summer 1993, Vol. 2, No. 3, pp. 44-46.
<i> </i>	AQ	Z	Heitmann, R., "A Direct Attach Evolution: TAB, COB and Flip Chip Assembly Challenges", Advanced Packaging, IHS Publishing Group, July/August 1994, Vol. 3, No. 4, pp. 95-99 and 103.
<i>WA</i>	AR	Z	Hodson, T., "Study Examines BGA Use", Electronic Packaging & Production, March 1993, page unknown.

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
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	AJ8						Yes No
	AK8						Yes No
	AL8						Yes No
	AM8						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

UA	AN	8	Holden, H., "The Many Techniques of Small Via Formation for Thin Boards", The Institute for Interconnecting and Packaging Electronic Circuits Ball Grid Array National Symposium, San Diego, CA, January 18-19, 1996, pp. 1-7.
	AO	8	Houghten, J., "New Package Takes On QFPs", Advanced Packaging, IHS Publishing Group, Winter 1993, Vol. 2, No. 1, pp. 38-39.
	AP	8	"How To Give Your BGAs A Better Bottom Line.", Advanced Packaging, IHS Publishing Group, January/February 1995, page unknown.
	AQ	8	Huang, W. and Ricks, J., "Electrical Characterization of PBGA for Communication Applications by Simulation and Measurement", National Electronic Packaging and Production Conference West '95, February 26-March 2, 1995, Anaheim, California, pp. 300-307.
LA	AR	8	Hundt, M. et al., "Thermal Enhancements of Ball Grid Arrays", National Electronic Packaging and Production Conference West '95, Reed Exhibition Companies, Anaheim, CA, February 25-29, 1996, pp. 702-711.

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	AJ9						Yes No
	AK9						Yes No
	AL9						Yes No
	AM9						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

1A	AN	2	Hutchins, C.L., "Understanding Grid Array Packages", Surface Mount Technology Magazine, IHS Publishing Group, November 1994, Vol. 8, No. 11, pp. 12-13.
	AO	2	Hwang, J.S., "Reliability of BGA Solder Interconnections", Surface Mount Technology Magazine, IHS Publishing Group, September 1994, Vol. 8, No. 9, pp. 14-15.
	AP	2	Hwang, J.S., "A Hybrid of QFP and BGA Architectures", Surface Mount Technology Magazine, IHS Publishing Group, February 1995, Vol. 9, No. 2, p. 18.
	AQ	2	Johnson, R. et al., "A Feasibility Study of of Ball Grid Array Packaging", National Electronic Packaging and Production Conference East '93, Boston, Massachusetts, June 14-17, 1993, pp. 413-422.
	AR	2	Johnson, R. et al., "Thermal Characterization of 140 and 225 Pin Ball Grid Array Packages", National Electronic Packaging & Production Conference East '93, Boston, Massachusetts, June 14-17, 1993, pp. 423-430.

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	AJ10					Yes No
	AK10					Yes No
	AL10					Yes No
	AM10					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

UA	AN	10	Johnston, P., "Land Pattern Interconnectivity Schemes", Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995, pages 2-21.
	AO	10	Johnston, P. "Printed Circuit Board Design Guidelines for Ball Grid Array Packages", Journal of Surface Mount Technology, Surface Mount Technology Association, January 1996, Vol. 9, pp. 12-18.
	AP	10	Kawahara, T. et al., "Ball Grid Array Type Package By Using of New Encapsulation Method", Proceedings of the 1995 International Electronics Packaging Conference, San Diego, CA, September 24-27, 1995, pp. 577-587.
	AQ	10	Knickerbocker, J.U. and Cole, M.S., "Ceramic BGA: A Packaging Alternative", Advanced Packaging, IHS Publishing Group, January/February 1995, Vol. 4, No. 1, pp. 20, 22 and 25.
W	AR	10	Kromann, G., et al., "A Hi-Density C4/CBGA Interconnect Technology for a CMOS Microprocessor" National Electronic Packaging and Production Conference West '95, IEEE, February 26-March 2, 1995, Anaheim, California, pp. 1523-1529.

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AJ11					Yes No
	AK11					Yes No
	AL11					Yes No
	AM11					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

1/11	AN	11	Kunkle, R., "Discrete Wiring for Array Packages", Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995, 9 pages.
1	AO	11	Lall, B. et al, "Methodology for Thermal Evaluation of Multichip Modules", IEEE Transactions on Components, Packaging, and Manufacturing Technology Part A, IEEE, December 1995, Vol. 18, No. 4, pp. 758-764.
1	AP	11	Lasance, C. et al., "Thermal Characterization of Electronic Devices with Boundary Condition Independent Compact Models", IEEE Transactions on Components, Packaging, and Manufacturing Technology Part A, IEEE Components, Packaging, and Manufacturing Technology Society, December 1995, Vol. 18, No. 4, pp. 723-731.
1	AQ	11	Lau, J., "Ball Grid Array Technology", McGraw-Hill Inc., 1995, entire book submitted.
1	AR	11	Lau, J. et al., "No Clean Mass Reflow of Large Plastic Ball Grid Array Packages", Circuit World, Wela Publications Ltd., Vol. 20, No. 3, March 1994, pp.15-22.

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	AJ12						Yes No
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	AL12						Yes No
	AM12						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

LA	AN	12	"Literature Review", Special Supplement to Electronic Packaging & Production, February 1995, Cahners Publication, 10 pages.
	AO	12	LSI LOGIC Package Selector Guide, Second Edition, LSI Logic Corporation, 1994-1995, entire document submitted.
	AP	12	"LTCC MCMs Lead to Ceramic BGAs," Advanced Packaging, IHS Publishing Group, September/October 1994, Vol. 3, No. 5, pp. 14-15.
	AQ	12	Mak, Dr. W.C. et al., "Increased SOIC Power Dissipation Capability Through Board Design and Finite Element Modeling", Journal of Surface Mount Technology, Surface Mount International, October 1994, pp. 33-41.
	AR	12	Marrs, R.C. and Olachea, G., "BGAs For MCMs: Changing Markets and Product Functionality", Advanced Packaging, IHS Publishing Group, September/October 1994, Vol. 3, No. 5, pp. 48, 50, and 52.

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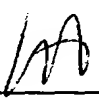




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		AJ13					Yes No
		AK13					Yes No
		AL13					Yes No
		AM13					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AN	13	Matthew, L.C. et al., "Area Array Packaging: KGD in a Chip-Sized Package", Advanced Packaging, IHS Publishing Group, July/August 1994, pp. 91-94.
	AO	13	Mawer, A. et al., "Plastic BGA Solder Joint Reliability Considerations", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 239-251.
	AP	13	Mazzullo, T. and Schaertl, L., "How IC Packages Affect PCB Design", Surface Mount Technology Magazine, February 1995, Vol. 9, No. 2, pp. 114-116.
	AQ	13	Mearig, J., "An Overview of Manufacturing BGA Technology", National Electronic Packaging and Production Conference West '95, February 26-March 2, 1995, Anaheim, California, pp. 295-299.
	AR	13	Merton, A., "Application of the Taguchi Method on the Robust Design of Molded 225 Plastic Ball Grid Array Packages", IEEE Transactions on Components, Packaging, and Manufacturing Technology Part B: Advanced Packaging, IEEE, November 1995, Vol. 18, No. 4, pp. 734-743.

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AJ14					Yes No
	AK14					Yes No
	AL14					Yes No
	AM14					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

IAA	AN	14	Mescher, P. and Phelan, G., "A Practical Comparison of Surface Mount Assembly for Ball Grid Array Components", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 164-168.
	AO	14	Mulgaonker, S. et al., "An Assessment of the Thermal Performance of the PBGA Family", Eleventh Annual IEEE Semiconductor Thermal Measurement and Management Symposium, IEEE, San Jose, CA, February 7-9, 1995, pp. 17-27.
	AP	14	"New PBGA Pushes Technology to Outer Limits", Advanced Packaging, IHS Publishing Group, January/February 1995, page 11.
	AQ	14	Olachea, G., "Managing Heat: A Focus on Power IC Packaging", Electronic Packaging & Production (Special Supplement), Cahners Publishing Company, November 1994, pp. 26-28.
WA	AR	14	"Pad Array Improves Density", Electronic Packaging & Production, Cahners Publishing Company, May 1992, pp. 25-26.

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	AJ15						Yes No
	AK15						Yes No
	AL15						Yes No
	AM15						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

IAA	AN	15	Partridge, J. and Viswanadham, P., "Organic Carrier Requirements for Flip Chip Assemblies", Journal of Surface Mount Technology, Surface Mount Technology Association, July 1994, pp. 15-20.
I	AO	15	Ramirez, C. and Fauser, S., "Fatigue Life Comparison of The Perimeter and Full Plastic Ball Grid Array", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September1, 1994, San Jose, California, pp. 258-266.
I	AP	15	Rogren, P., "MCM-L Built on Ball Grid Array Formats", National Electronic Packaging and Production Conference West '94, Anaheim, California, pp. 1277-1282.
I	AQ	15	Rooks, S., "X-Ray Inspection of Flip Chip Attach Using Digital Tomosynthesis", Surface Mount International, Proceedings of The Technical Program, August 28-September1, 1994, San Jose, California, pp. 195-202.
WA	AR	15	Rukavina, J., "Attachment Methodologies: Ball Grid Array Technology", Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995, 37 pages.

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	AM16						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

LA	AN	16	Sack, T., "Inspection Technology", Ball Grid Array National Symposium, Dallas, Texas, March 29-30, 1995, pages 1-41.
	AO	16	Sakaguchi, H., "BGA Mounting Technology," pgs. 1-4, date and source unknown.
	AP	16	Schmolze, C. and Fraser, A., "SPICE Modeling Helps Enhance BGA Performance", Electronic Packaging & Production, January 1995, pp. 50-52.
	AQ	16	Semiconductor Group Package Outlines Reference Guide, Texas Instruments, 1995, entire document submitted.
	AR	16	Shimizu, J., "Plastic Ball Grid Array Coplanarity", Surface Mount International Conference, San Jose, California, August 31-September 2, 1993, pp. 86-91.

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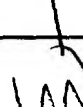
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AJ17					Yes No
	AK17					Yes No
	AL17					Yes No
	AM17					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AN	17	Sigliano, R., "Using BGA Packages: An Appealing Technology in a QFP and Fine-Pitch Market", Advanced Packaging, IHS Publishing Group, March/April 1994, pp. 36-39.
	AO	17	Sirois, L., "Dispensing for BGA: Automated Liquid Dispensing in a High-Density Environment", Advanced Packaging, IHS Publishing Group, May/June 1995, pp. 38 and 41.
	AP	17	Solberg, V., "Interconnection Structure Preparation: Impact of Material Handling and PCB Surface Finish on SMT Assembly Process Yield", Ball Grid Array National Symposium, Dallas Texas, March 29-30, 1995, 10 pages.
	AQ	17	"Survival of the Fittest", Advanced Packaging, IHS Publishing Group, March/April 1995, page unknown.
	AR	17	Tuck, J., "BGA Technology Branches Out", Circuits Assembly, February 1995, Vol. 6, No. 2, pp. 24, 26, and 28.

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	AK18					Yes No
	AL18					Yes No
	AM18					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

WA	AN	18	"Tutorial and Short Courses", 45th Electronic Components & Technology Conference, May 21-24, 1995, Las Vegas, Nevada, IEEE, 6 pages.
	AO	18	Vardaman, E. J. and Crowley, R.T., "Worldwide Trends In Ball Grid Array Developments", National Electronic Packaging and Production Conference West '96, Reed Exhibition Companies, Anaheim, CA, February 25-29, 1996, pp. 699-701.
	AP	18	Walshak, D. and Hashemi, H., "Thermal Modeling of a Multichip BGA Package", National Electronic Packaging and Production Conference West '94, Reed Exhibition Companies, Anaheim, California, February 27-March 4, 1994, pp. 1266-1276.
	AQ	18	Walshak, D. and Hashemi, H., "BGA Technology: Current and Future Direction for Plastic, Ceramic and Tape BGAs", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 157-163.
WA	AR	18	Xie, H. et al., "Thermal Solutions to Pentium Processors in TCP in Notebooks and Sub-Notebooks", 45th Electronic Components & Technology Conference, IEEE, Las Vegas, NV, May 21-24, 1995, pp. 201-210.

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	AL19						Yes No
	AM19						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

UA	AN	19	Yip, W.Y., "Package Characterization of a 313 Pin BGA", National Electronic Packaging and Production Conference West '95, Reed Exhibition Companies, February 26-March 2, 1995, Anaheim, California, pp. 1530-1541.
	AO	19	Zamborsky, E., "BGAs in the Assembly Process", Circuits Assembly, February 1995, Vol. 6, No. 2, pp. 60, 62-64.
	AP	19	Zimmerman, M., "High Performance BGA Molded Packages for MCM Application", Surface Mount International Conference Proceedings, Surface Mount International, August 28-September 1, 1994, San Jose, California, pp. 175-180.
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EXAMINER

DATE CONSIDERED

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

APPLICANT
Khan et al.FILING DATE
February 15, 2001GROUP
2826

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
	AA20					
	AB20					
	AC20					
	AD20					
	AE20					
	AF20					
	AG20					
	AH20					
	AI20					

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION
	AJ20					Yes No
	AK20					Yes No
	AL20					Yes No
	AM20					Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

AN	20	Marrs, R. et al., "Recent Technology Breakthroughs Achieved with the New SuperBGA® Package", 1995 International Electronics Packaging Conference, San Diego, California, September 24-27, 1995, pp. 565-576.
AO	20	Hayden, T.F. et al., "Thermal & Electrical Performance and Reliability Results for Cavity-Up Enhanced BGAs", Electronic Components and Technology Conference, IEEE, 1999, pp. 638-644.
AP	20	Thompson, T., "Reliability Assessment of a Thin (Flex) BGA Using a Polyimide Tape Substrate", International Electronics Manufacturing Technology Symposium, IEEE, 1999, pp. 207-213.
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